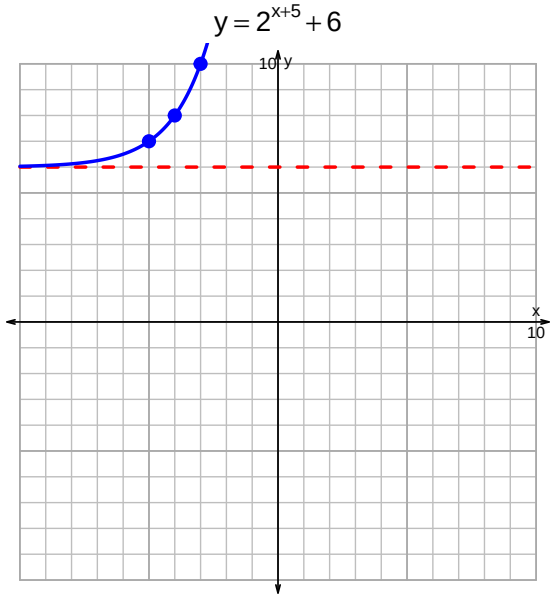
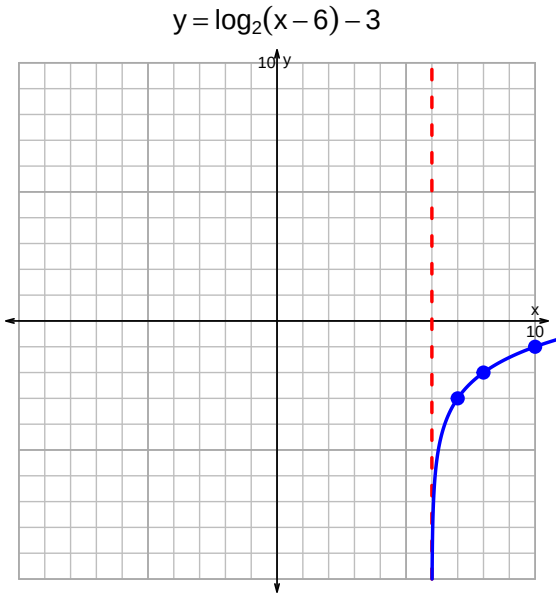
Name: Date:

## s18quiz: EXP LOG (Solution v132)

1. Graph $y = 2^{x+5} + 6$ and $y = \log_2(x-6) - 3$ on the grids below. Also, draw any asymptotes with dotted lines.




2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$13 = \left(\frac{3}{4}\right) \cdot 10^{5t/7}$$

Divide both sides by $\frac{3}{4}$.

$$\frac{13 \cdot 4}{3} = 10^{5t/7}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{13 \cdot 4}{3}\right) = \frac{5t}{7}$$

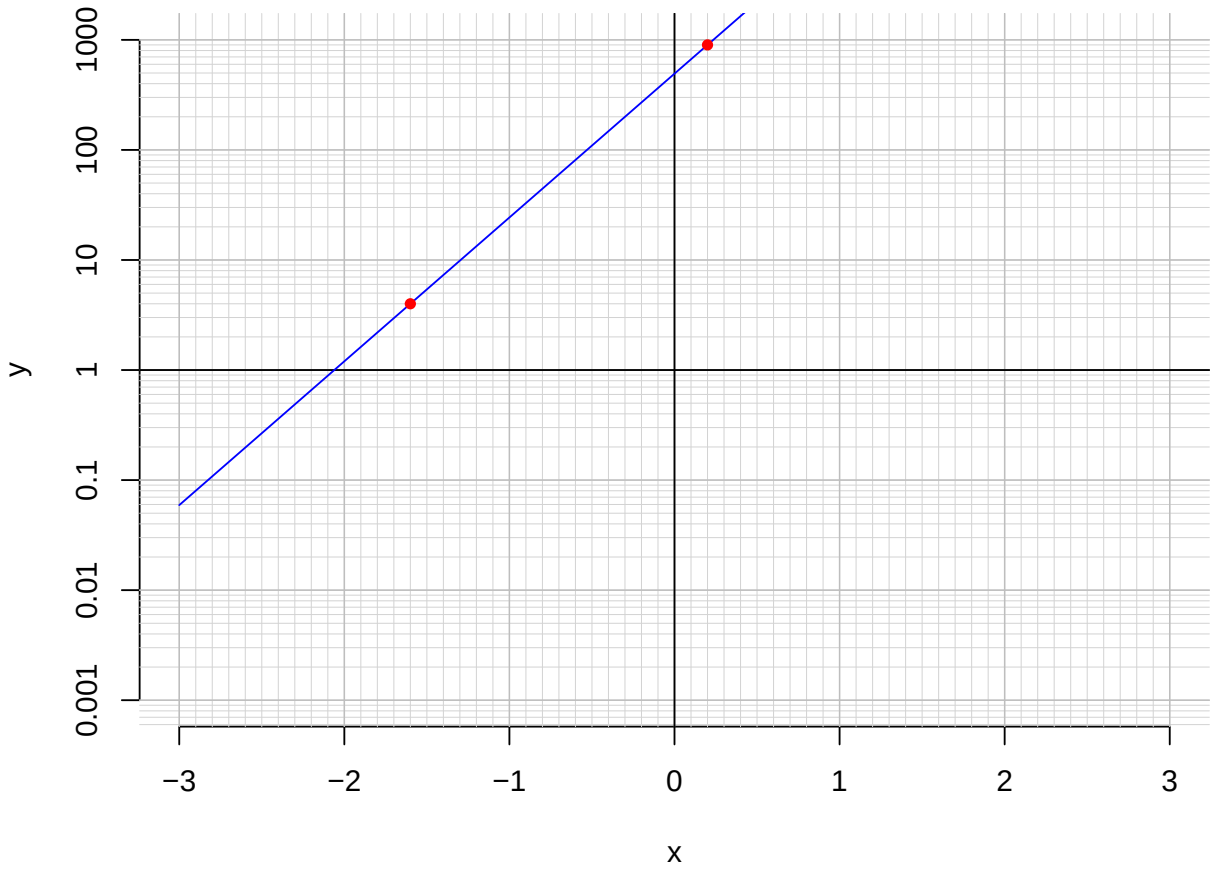
Divide both sides by $\frac{5}{7}$.

$$\frac{7}{5} \cdot \log_{10}\left(\frac{13 \cdot 4}{3}\right) = t$$

Switch sides.

$$t = \frac{7}{5} \cdot \log_{10}\left(\frac{13 \cdot 4}{3}\right)$$

3. An exponential function $f(x) = 493 \cdot e^{3.01x}$ is graphed below on a semi-log plot.




a. Using the plot above, evaluate $f(-1.6)$.

$$f(-1.6) = 4$$

b. Express $f^{-1}(x)$, the inverse of $f$.

$$f^{-1}(x) = \frac{1}{3.01} \cdot \ln\left(\frac{x}{493}\right)$$

c. Using the plot above, evaluate $f^{-1}(900)$.

$$f^{-1}(900) = 0.2$$